MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2016/2017

TTP 3121 – TCP/IP PROGRAMMING

(All Sections / Groups)

29 MAY 2017
2.30 p.m. – 4.30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 printed pages including cover page with 5 questions only.

2. Attempt **ALL** questions. Marks and the distribution of marks for each question is given.

3. Please write all your answer in the Answer Booklet provided.

Question 1 [10 Marks]

(a) What are the **TWO** differences between OSI layers and TCP/IP Model?

[4 Marks]

(b) With aid of diagrams, briefly discuss **TWO** (2) types of client server architecture.

[4 Marks]

(c) List and briefly explain the functionality of **TWO** (2) core protocols in Internet layer.

[2 Marks]

Question 2 [10 Marks]

(a) Identify the connection between the active process and system call in UNIX kernel programming. Give **TWO** (2) examples of system call.

[3 Marks]

(b) Differentiate the function of fork( ) and wait( ) in UNIX's system call.

[3 Marks]

(c) What is the output of the following program?

```
1   import os
2
3   def child():
4     for i in range(0,2):
5       print "This line is from child, value = %d\n" %i
6     print "Child process is done!"
7
8
9   def parent():
10    for i in range(0,2):
11      print "This line is from parent, value = %d\n" %i
12    print "Parent process is done!"
13
14  if __name__=="__main__":
15    child_pid = os.fork()
16    if child_pid == 0:
17      child()
18    else:
19      parent()
```

[4 Marks]

Continued ...

Question 3 [10 Marks]

(a) What is Interprocess Communication (IPC)? List **TWO** types of IPC.

[3 Marks]

(b) With aid of diagram, describe the concept of message queue in Inter Process Communication (IPC).

[4 Marks]

(c)

i. Identify the IPC system call used in the following program and describe the operation and function of the program.

ii. What are the outputs of the program? [Hint: You can use any string as an example]

[1 + 2 = 3 Marks]

```
1   import os,sys
2
3   def child():
4     r.close()
5     str1 = raw_input("Enter String:")
6     print str1
7     w.write(str1)
8     w.close()
9
10  def parent():
11    w.close()
12    str = r.read()
13    rev_str = str[::-1]
14    print rev_str
15    sys.exit(0)
16
17  if __name__=="__main__":
18    r, w = os.pipe()
19    w = os.fdopen(w,'w')
20    r = os.fdopen(r,'r')
21    child_pid = os.fork()
22    if child_pid == 0:
23      child()
24    else:
25      parent()
```

Continued ...

Question 4 [10 Marks]

(a) Give a diagram to illustrate the connection process of a typical TCP socket.

[2 Marks]

(b) Write a TCP server program in Python that opens and reads a text file after an establishment of connection. The program is then required to send the content of the file to the client.

[4 Marks]

(c) Write a TCP client program in Python that receives data from its connected server. The screen will display the data received from the server once the connection is established. The program also will write the received data in the text file.

[4 Marks]

Question 5 [10 Marks]

(a) Explain **TWO** benefits of Remote Procedure Call (RPC).

[2 Marks]

(b) Why is the connectionless transport service more desirable for supporting RPCs?

[2 Marks]

(c) With aid of diagram, write short notes on Blocking I/O model.

[6 Marks]

End of Paper